5. On the Species of *Canidæ* found on the Continent of Africa. By W. E. de Winton, F.Z.S.

[Received March 6, 1899.]

The acquisition by the Society of two living Jackals from Somaliland, of the species called by Prof. Noack *Canis hagenbecki*, hitherto unknown in a living state in this country, enforced the necessity of re-examining the African Dogs, and our Secretary has asked me to undertake the task. This communication is not confined to the Jackals of the Ethiopian Region, but takes in all the members of the family of Canidæ inhabiting the continent of Africa.

While endeavouring to throw some light into the hopeless confusion the nomenclature of the Jackals of Africa is now in, I do not expect the present communication to clear up all the disputable points; but it is hoped that by sifting the old descriptions and giving an account of the forms so far as are known to the principal Museums and Zoological Gardens of Europe, some better agreement as to which names shall be applied to certain forms may be arrived at. In no single museum is there to be found a good representative collection of the different African species, so that it is extremely hard to make comparisons and to recall exact characters of specimens examined in different museums. The type specimens of the older described forms have been in most cases mounted, therefore faded and worn almost beyond recognition, and the skulls inaccessible.

One species, *Canis lateralis*, described by Dr. Sclater in 1870, from West Africa, has since been generally considered to be identical with the *C. adustus* of Sundevall. So far as I can make out, the probability is that Sundevall had an example of *C. lateralis* before him, as it doubtless extends into S.E. Africa. But without examining the type it is impossible to be certain on this point, and I prefer to use the first name, of which there can be no doubt, as in this way no confusion can occur on the subject in the future.

Dr. Noack has lately published, from not at all satisfactory material, descriptions of four additional forms which I have little hesitation in assigning to one or other of the already well-known species. I am quite prepared, however, to find that this subject will soon require revision.

If, when we know more of the African Jackals, further subspecies are thought necessary, it will be quite evident, on looking at the synonymy given in this paper, that some of these names can be utilized, but so far I see very little use in subdividing the species.

I consider the Jackals and Foxes of the Old World so readily recognizable one from another that I should like to keep them apart, though no important character by which to distinguish them can be given. Even the outward characters and habits are beyond my power to define; and I regret to say that even Dr. Blanford's distinctions (Geol. & Zool. Abyss. p. 239) will not stand when

put to the test. A Jackal may have a sharp bark, as *C. adustus* (called "Quaha" by the Caffirs, from its cry), and the ears of a Jackal may be longer than those of the Common Fox, as in *C. variegatus* and *C. mesomelas*.

It is impossible to follow Gray (P. Z. S. 1868, pp. 492–525), who gave no anatomical or practical reasons for his arrangement and subdivision of the genus, but the Jackals and Foxes as they are usually classed form very natural and convenient groups or subgenera. The skull of a Fox is very much less powerful than that of a Jackal; the suborbital parts of the zygomata are more expanded and the inner surfaces of these bones are turned upwards. The small Foxes I shall group together under the name of Sand-Foxes, keeping the Fennec to form a separate subgroup by itself.

On looking at a number of skins of Dogs, one is struck with the constancy of the general pattern of the markings. Thus all the Jackals are inclined to a saddle-mark; this reaches perfection in *C. mesomelas*, while in *C. anthus* there is no defined line, though the fur is longer and thicker within the same limits. But the tendency to have a black spot on the dorsal surface of the tail, about two inches from the root, is a character which runs through the whole genus, Jackals and Foxes alike. This spot is no doubt due to a gland, for the hair of this region is more rigid than elsewhere, and there is no underfur growing upon it; the stiff hairs are generally shorter than those of the surrounding part of the tail and lie rather flat, forming a depression in the fur; and in many instances, in the dried skin, a yellow substance is found to clog the hair, which has a distinctly aromatic smell.

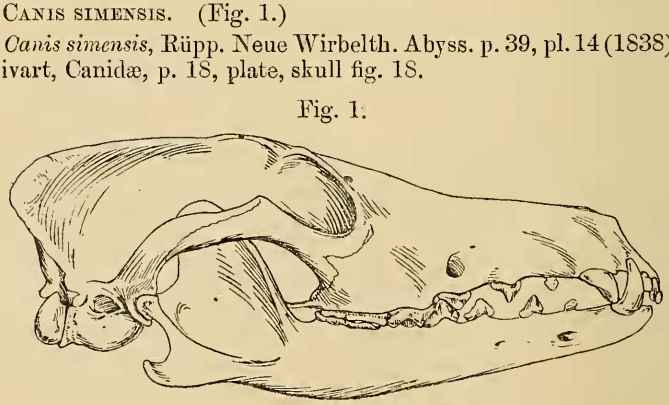
I have to record my best thanks to Dr. J. Anderson, F.R.S., Mr. R. J. Cuninghame, Major Harrison, D.S.O., and Mr. F. J. Jackson, C.B., who have helped me with specimens of Jackals, also to Colonel Lugard, C.B., for the loan of a specimen of the Hunting-Dog from British East Africa.

Genus 1. Canis.

Canis simensis. (Fig. 1.)

Canis simensis, Rüpp. Neue Wirbelth. Abyss. p. 39, pl. 14 (1838); Mivart, Canidæ, p. 18, plate, skull fig. 18.

Fig. 1.



Skull of *Canis simensis*, $\frac{3}{5}$ nat. size. (B.M. 42.8.15.11; 162*a*.)

Canis sinus, Gerv. Hist. Nat. Mamm. ii. p. 58 (1855).
Canis walgie, Heugl. Nov. Act. Leop. 1863, Zool. Afr. p. 3.
Simenia simensis, Gray, P. Z. S. 1868, p. 506.
Canis semiensis, Heugl. Reise N.O.-Afr. ii. p. 48 (1877).

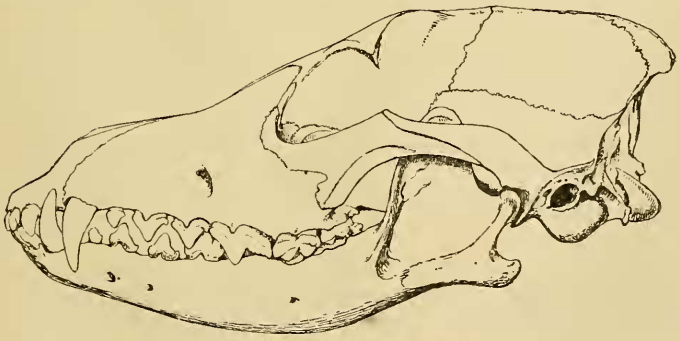
Very little is known of this somewhat isolated form of Dog, which seems to be confined to the mountainous district of Abyssinia. The specimen brought home by Rüppell, which is one of the types of the species, is still the only example in the British Museum.

The Jackals—*Sacalius*.

Canis anthus. (Fig. 2.)

? Le Chacal-Adive, Buffon, Hist. Nat. Suppl. iii. p. 112, pl. xvi. (1776).
? Barbary Dog, Pennant, Quad. i. p. 260 (1793).
? *Canis barbarus*, Shaw, Zool. i. p. 311 (1800).
Canis anthus, F. Cuv. Mamm. lith. pls. 173, 174 (1820); Mivart, Canidæ, p. 41, plate (partim) (1890), skull fig. 20.
Canis lupaster, Hemp. & Ehrenb. Symb. Phys., Mamm. ii. (1830).
Thous anthus, H. Smith, Jardine's Nat. Libr. ix. p. 195 (1839).
Thous senegalensis, H. Smith, Jardine's Nat. Libr. ix. p. 201 pl. xiii. (1839).
Sacalius barbarus, H. Smith, Jardine's Nat. Libr. ix. p. 218 (1839).
Canis aureus algirensis, Wagn. Schreb. Säug. Suppl. i. p. 384 (1841).
Canis aureus tripolitanus, id. ibid.
„ „ var. *algeriensis*, Less. Nouv. Tab. Règn. Anim. p. 43 (1842).
Lupus anthus, Gray, P. Z. S. 1868, p. 502.
Dieba anthus, Gray, Cat. Mamm. Brit. Mus. p. 189 (1869).
Canis aureus, auct. (partim), nec Linn.
Canis hadramauticus, Noack, Zool. Anz. 1896, p. 356 (fide Matschie).

Fig. 2.



Skull of *Canis anthus*, ½ nat. size. (B.M. 98.7.4.7.)

A larger animal than the Indian Jackal (*Canis aureus*), and

much more wolf-like. The nose and ears are bright bay, contrasting with the greyish forehead; there is no defined saddle, the black-tipped hairs appearing on almost all parts of the animal, but being scarcer on the flanks and legs; a blackish line runs down the front of the fore legs, ending in a distinct blotch on the wrist as in *C. lupus*. The tail is bushy, most of the hairs black-tipped, the black almost monopolizing the whole length of the hairs towards the end of the brush; the black spot over the gland is well marked, but owing to the general dark colouring is not particularly conspicuous. Ears moderate.

In Egypt this Jackal grows to a larger size—the skulls being equal to those of the Indian Wolf, *C. pallipes* Sykes nec Mivart; the colour is greyer than that of specimens from Barbary and the fur less rich. This form is generally called the Egyptian Wolf, but it will be seen by the specimens in the Society's Gardens that, when living in a moister climate, no difference can be detected in the colour or richness of the fur.

The North-African Jackal has never been given a very definite position as a species. All modern writers have either confused it with the Asiatic Jackal, *C. aureus*—a species which never crosses into Africa—or have only separated it with doubt; but there does not seem any valid excuse for uniting them. F. Cuvier was the first naturalist who gave anything like a scientific description of the animal. Pennant's "Barbary Jackal" does not seem quite satisfactory; this was a specimen found in the Ashmolean Museum at Oxford, a figure of which appears in Buffon's work, but I cannot fix this figure on any known Jackal. Shaw gave a Latin name to the animal described by Pennant, but it seems very doubtful whether this beast was a Jackal or a Fox. Uncertain names are simply placed in the synonymy, the earliest name of which there is no doubt being used.

This species ranges from Senegal on the west, round the whole of the north of Africa into Lower Egypt. Its exact range in the Nile Valley is not yet known, but so far no specimens have been recorded south of the First Cataract. So far as is known, this species does not occur to the east of the Red Sea; though Herr Matschie has lately stated (S.B. Ges. nat. Fr. 1897, v. p. 73) that *C. hadramauticus* Noack, described from Southern Arabia, is identical with *C. lupaster*. There is in the British Museum a skull from Aden which I have no hesitation in referring to *C. pallipes*; and as these two animals are very closely allied, the Indian Wolf being distinguished only by its rather heavier build and much stronger teeth, I think it far more probable that Dr. Noack's species will turn out to be an offshoot of the Indian, and not of the Egyptian Wolf.

The figure given in Dr. Mivart's book is a fair representation of the species, but from the letterpress we gather that the drawing was taken from a certain specimen from Abyssinia, still in the British Museum, which proves to be an example of the next species,

C. variegatus—the artist having probably worked up the picture with skins of the true *C. anthus* from Barbary.

The skull of the North-African Jackal is readily distinguishable from that of the Indian Jackal, *C. aureus*, by its greater size, and more particularly by the longer parallel-sided snout, and the high forehead more abruptly rising from the line of the nasals, the more evenly expanding—not bowed—zygomata, and the heavier dentition. But the larger Egyptian race very closely resembles the Indian Wolf, *C. pallipes* Sykes, the skulls of these two being practically the same size and shape, although the teeth of the Indian Wolf are much heavier. These different races therefore bridge over any marked distinction between the Wolves and Jackals.

Measurements (in millim.) of the upper flesh-tooth $\frac{pm.\ 4}{}$ are given of the smallest and largest of each species which has come under my notice :—

C. aureus.	*C. anthus.*	*C. pallipes.*
15·5–17	17·5–20	21–22

Dr. Mivart has caused much confusion by including *C. pallipes* in his description of *C. lupus*, the figure given of *C. lupus* var. *pallipes* being that of the form of the true Wolf found in Northern India.

C. pallipes, as described by Sykes, P. Z. S. 1831, p. 101, is particularly stated to be the Wolf of Deccan, so this name can only apply to the well-known Wolf of the Peninsula, which is not greatly superior in size to the Egyptian Wolf.

In Dr. Blanford's 'Fauna of British India' the two Indian species are fully and accurately described.

[P.S.—Since these notes were read I have seen specimens of Jackals said to come from Senegal and the interior of Tunisia, which seem to me to agree rather closely with Cuvier's description and figure of *Canis anthus*, and it is therefore possible that the large North-African Jackal which has been unanimously called *C. anthus* is bearing a wrong name, and should be called *C. lupaster*, while, of course, this much smaller, fine-legged, sharp-nosed, and paler-coloured animal is the true *C. anthus*. One specimen lately acquired from the Antwerp Zoological Gardens, and living in our Gardens in Regent's Park, is said to have been brought direct from Senegal; other specimens referred to are a male and female with cubs, beautifully set up as a group in the Leyden Museum. Dr. Jentink informs me that there can be no doubt as to the locality of these specimens, as they were collected in Tunisia by a well-known contributor to the museum.]

Canis variegatus. (Fig. 3.)

Sea-Fox, Salt, Voy. Abyss. p. 172, App. iv. p. 40 (1814).
Canis variegatus, Cretzschm. Rüpp. Atlas, p. 31, pl. 10 (1826).
Canis riparius, Hempr. & Ehrenb. Symb. Phys., Mamm. ii. (1830).
? *Canis sacer*, id. ibid.

Thous variegatus, Smith (H.), Jardine's Nat. Libr. ix. p. 198, pl. xi. (1839).

Vulpes variegata, Gray, P. Z. S. 1868, p. 516.

Canis anthus, Mivart, Canidæ, p. 41 (partim), plate inaccurate (1890).

Canis hagenbecki, Noack, Zool. Garten, 1894, p. 244.

Canis riparius Blanford, Geol. & Zool. Abyssinia, pp. 14, 240 (1870).

? *Canis mengesi*, Noack, Zool. Anz. no. 548, 1897, p. 518.

Fig. 3.

Skull of *Canis variegatus*, $\frac{2}{3}$ nat. size. (B.M. 169 *a*.)

General pattern of colour as in *C. anthus*, but very much paler; the snout very slightly more rufous than the rest of the face; the backs of the ears and the legs pale orange-red, but the latter mixed with some black, and a dark streak on the front of the wrist; on the back and sides there is more or less mottling of black; in some specimens the saddle-area is heavily mottled. On the whole of the saddle-area the fur is longer, reddish at the base, followed by a pale buff band and broad black tips; the freshness of this, in a more or less degree, accounts for the mottling. In some specimens from the highlands of Abyssinia it almost approaches the saddle of *C. mesomelas*, though the mixture of black on the flanks, the want of rufous colouring, and the strong dashes of black on the fore legs will at once distinguish it from that species.

Along the dorsal line, and especially over the shoulders, the hair is longer than on any other part. The black patch over the gland on the tail is conspicuous. The form is very gaunt (totally unlike any of its congeners), the snout is very fine and long, and the ears are remarkably long, which at once distinguish it from any specimen of the North-African Jackal.

The known range of this species is Upper Egypt and Sennaar, and along the coast from Suakim to Somaliland and the higher plateaux of Abyssinia.

This form, described by Cretzschmar and fairly figured from a specimen sent home by Rüppell, had doubt thrown upon it by the collector himself in his own work, Neue Wirbelth. Abyss., Säug. p. 39 (1838). At the same time we are told that the skull had been lost, and so comparison was not possible with that of *C. mesomelas*, of which species it was thought to be only a variety. Since that time no one but Dr. Blanford (Geol. & Zool. Abyss. p. 238) has given the species a proper status. The name has been used by some writers for the northern form of *C. mesomelas*; Dr. Mivart has confounded it with *C. anthus*. Dr. Noack has overlooked the species when naming the Somaliland Jackal *C. hagenbecki*; but since seeing examples of this latter form alive, and also having examined about a dozen skins and skulls, I feel no doubt in identifying the Somaliland animal with *C. variegatus*.

The form described by Dr. Noack as a separate species, under the name of *C. mengesi*, appears to me to be simply a sandy-rufous variety, wanting the broad black band in the fur of its back. The dark marks in the front of the fore legs are very much less distinct than in the typical form, but *are not entirely wanting*.

As mentioned above, the specimens from the highlands of Abyssinia, obtained by Dr. Blanford, are richer in colouring, and owing to the longer and *denser* fur would appear stouter in build (see *op. cit.* p. 240), but at the same time these specimens somewhat approach *C. mesomelas* in having heavier skulls; so it may be just possible that we have here a hybrid race confined to this high plateau.

Excepting in the narrowness of the frontal region and greater length of the facial portion, the skull of *C. variegatus* is very like that of *C. mesomelas*, only differing in its general narrowness and in the less expanded squamosal portion of the zygomata.

Canis mesomelas. (Fig. 4.)

Canis mesomelas, Schreb. Säug. iii. p. 370, pl. 95 (1778); Mivart, Canidæ, p. 45, pl. (1890).

Canis variegatoides, Smith (A.), S. Afr. Quart. Journ. 1833, p. 85.

Thous mesomelas, Smith (H.), Jardine's Nat. Libr. ix. p. 199, pl. xii. (1839).

Vulpes mesomelas, Gray, P. Z. S. 1868, p. 516.

Canis variegatus, Matschie, Säug. Deutsch-O.-Afr. p. 64 (1895).

Canis mesomelas var. *schmidti*, Noack, Zool. Anz. no. 548, 1897, p. 519.

Face rufous, most of the hairs on the cheeks and forehead tipped with whitish; ears very large, bright rufous; saddle very distinct, all the hairs rufous at the base followed by a black ring, with a broad subterminal buff-white ring and tipped with black; the flanks and legs bright rufous without intermixture or markings of black. The tail is rather short, all the hairs tipped with black: the spot over the gland well developed; the stiff hairs are white for the greater part of their length, with jet-black tips. This is

the only Jackal which has no dark dashes on the front of the fore legs.

The Black-backed or Silver Jackal has the most extended range of any member of the genus inhabiting Africa, extending from the extreme south of Cape Colony to Abyssinia, and possibly Bongo-land, where Schweinfurth mentions Jackals with black backs ('Heart of Africa' (Engl. transl.) i. p. 237). It has not been recorded from the Mashonaland plateau or Nyasaland; and in British East Africa we have no record of it being found farther west than Machacos, where it occurs in company with *C. lateralis*. It seems therefore probable that this species does not range into the higher elevations.

Fig. 4.

Skull of *Canis mesomelas*, ⅔ nat. size. (B.M. 69.10.24.7.)

This species is therefore accompanied by *C. lateralis* in certain localities in the southern part of its range, and by *C. variegatus* in the northern. Specimens from south of the Zambesi, judged from the material in the British Museum, are rather larger, and the facial part of the skull appears slightly longer in proportion than those obtained from the north of that river; but whether the difference is sufficient to warrant a subspecies being made of the northern form is not clear, most of the specimens examined of the southern or typical form being deficient in the base of the skull. However, if a name is required for the northern form, Dr. Noack has provided one in his var. *schmidti*. In writing of this Jackal under the name *C. variegatus*, Herr Matschie mentions a stripe on the cheeks; but I cannot think his distinction of the East-African form is based on this character alone, for not only is it too trifling, but quite unreliable, as this dark line under the eyes occurs in some specimens from Cape Colony. The markings of this animal are not always equally well defined, occasional specimens have a very poorly marked saddle.

The cry of this animal, as observed in captivity, may be

expressed as "Wa-ah, wah, wah, wah," and when examining some suspicious-looking object it gives out a low growl ending in a suppressed bark.

The skull is short and strong, and the muzzle much broader than in *C. variegatus*; the squamosal portions of the zygomata are very much expanded; the nasal bones are short, being almost invariably shorter than the maxillary processes; there is a deep depression in the middle line of the very broad forehead; the carnassial teeth are very powerful and much larger than those of *C. lateralis*. *C. variegatus* seems to me to be the only Jackal of which the skull can possibly be confused with that of this species, but not only the muzzle but the skull throughout is much narrower in proportion to its length.

I give simple length and breadth measurements (in millim.) of the largest and smallest entire skulls of these two species that have come under my notice:—

C. variegatus.

Large ♂, from highlands of Abyssinia (Blanford), 172 × 90.

Small and quite young specimen from Nubia (Burton), 145 × 78.

C. mesomelas.

Adult from Ukamba, B. E. Afr. (Jackson), 151 × 88.

Young specimen from Ukamba (Harrison), 146 × 83.

CANIS LATERALIS. (Fig. 5.)

?*Canis adustus*, Sundev. (Efvers. K.Vet.-Ak. Förh. 1846, p. 121 (?); Mivart, Canidæ, p. 49, pl. (1890).

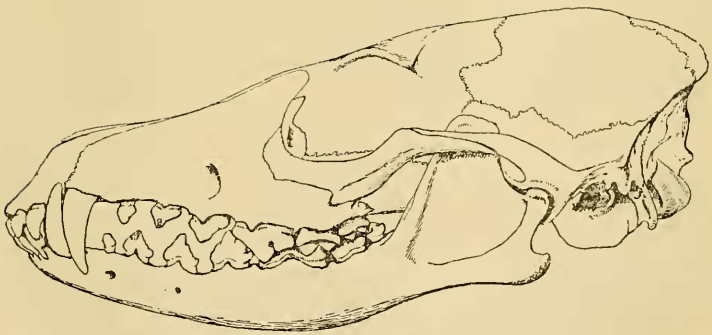
Vulpes adusta, Gray, P. Z. S. 1868, p. 515.

Canis lateralis, Sclat. P. Z. S. 1870, p. 279, pl. xxiii.

Canis holubi, Lorenz, Verh. Ges. Wien, 1895, p. 110.

? *Canis wunderlichi*, Noack, Zool. Anz. no. 548, 1897, p. 519.

Fig. 5.



Skull of *Canis lateralis*, ⅔ nat. size. (B.M. 92.12.3.8.)

General colour of the body-fur grey-drab, the majority of the hairs black-tipped, the face, ears, flanks, and legs being likewise heavily mixed with black, though the underfur of the face and legs

is more rufous than that of the body. Distinct dark dashes on the lower part of the forearm. On the dorsal surface, or saddle, the fur is bright rufous for the greater part of its length, each hair having a ring of black followed by a ring of buff and being tipped with black; these coloured rings form double side-stripes of buff and black bordering the lower edge of the saddle, which are often ill-defined or not observable, the colour of the flanks outwardly being scarcely different from the back, but when the hair is worn the saddle is often reddish. The tail is long and clothed with long hairs, buff at the base, and black for an inch and a half or so at their extremities; generally there is a distinct white tag, the hairs growing on the last two inches of the tail being sometimes pure white to their bases, in some specimens only a very few white hairs are to be found at the extreme tip. Tail-gland not conspicuous owing to the character of the surrounding fur. Chin black. Ears moderate.

Usually this Dog has the side-stripes, bordering the lower edge of the saddle, well defined; but when changing fur or when out of condition these stripes entirely disappear; this often happens in simply altering the lay of the fur in making up a skin. Possibly also in some districts the species does not develop these stripes to so great an extent as in others. At any rate it is probable that Sundevall had a specimen of this species before him when he described a Jackal from the Transvaal or Zululand, giving it the name of *C. adustus*. In this description, it is true, no mention is made of any side-stripes, but the Side-striped Jackal occurs in that country and *no Jackal without a saddle-mark is found anywhere in South Africa*. Dr. Noack seems also to have described the same animal as *C. wunderlichi*, but he appears to have entirely overlooked Sundevall's species as he makes no mention of it.

Dr. Sclater described *C. lateralis* from a specimen then living in the Society's Gardens, giving the side-stripes as the principal distinguishing characters and giving a name suggestive of this distinction. When this specimen died the skin and skull were acquired by the British Museum, and the skin, which is now before me, has no sign of side-stripes; the same thing has been shown in other examples which have been received from Nyasaland. Normally these latter are particularly well marked.

The skull of this species is readily distinguished from any other Jackal by its flatness, the line of the forehead running well in front of the orbits and being very little raised above the line of the nose. The nasals are long, extending beyond the maxillary bones; the squamosal portion of the zygomata is not so much expanded as in *C. mesomelas*; there is no depression in the middle line of the forehead; and the carnassial teeth are very much smaller than those of either *C. variegatus* or *C. mesomelas*.

In several specimens obtained by Mr. F. J. Jackson at the Ravine Station and Nandi, British East Africa, the skull is much arched, with smooth rounded forehead, quite altering the shape of the profile, but viewed from above the shape of the skull is unaltered. The flat and the rounded skulls are from animals otherwise identical,

and both forms were taken at the same time. These characters are found in both old and young, and it is most satisfactory to have such a fine series (about 20) taken in the same locality, proving that these characters are only individual and not racial. Mr. Jackson has noted measurements and weights of the majority of his specimens, and the total length to the end of the vertebræ of the tail ranges from 3 feet 3½ inches to 3 feet 5½ inches, the tail alone from 11½ inches to 12 inches. Weights of ♂ 14–16 lbs., ♀ 13½–15 lbs.

So far as is known the Side-striped Jackal ranges from Namaqualand [1] to the Gaboon on the west, and from Zululand to the Tana River on the east; it is found throughout Rhodesia, Nyasaland, and British East Africa as far west as Uganda.

This Jackal has several characters which bridge over the separating line one would like to draw between the Jackals and the Foxes: its tail is long, with a white tag; its cry is a short bark; and its skull is very flat, in side view very like that of the European Fox (*C. vulpes*); but no one can question its being a true Jackal.

Mr. F. C. Selous informs me that both the "Silver Jackal" (*C. mesomelas*) and the "Quaha" (*C. lateralis*)—easily recognized by their different voices—are found on the same ground in Bechuanaland, and that he has seen both of them come up from separate directions to a dead animal at the same time. These two forms are widely distinct, but it is nevertheless a very strange fact that two species should thrive in the same districts, seeing that their habits are alike; and considering their mode of life, it would seem certain that they must come to blows, and the weaker one succumb. These two animals live side by side in many districts up to the Tana River; northwards, in Somaliland, &c., *C. variegatus* takes the place of *C. lateralis*.

Mr. Selous further informs me that he has never seen Jackals in packs, that they come up singly or in couples from different hiding-places, whether to the camp at night or to a dead beast by day. He says, a favourite place for Jackals to lie up by day is in the long grass which grows on the sides of the ant-heaps, and that when hard pressed by dogs they often go to ground in the holes made by the Aard-vaark.

The Foxes—*Vulpes*.

(1) *Red Foxes*.

Canis vulpes ægyptiacus. (Fig. 6.)

Canis egyptius, Desmar. Nouv. Dict. Hist. Nat. xxiv. Tab. Méth. p. 18 (1804), *nom. nud.*

Canis ægyptiacus, Sonnini, Nouv. Dict. vi. p. 524 (1816).

Canis niloticus aut *ægyptiacus*, Desmar. Mamm. p. 204 (1820).

[1] Dr. Broom, of Garies, informs me the natives bring in skins of "Jackals with a yellow stripe on the side," together with those of the Silver Jackal, to trade with the store-keepers.

Canis niloticus, Cretzschm. Rüpp. Atlas, p. 41, t. 15 (1826); Hempr. & Ehrenb. Symb. Phys. pl. xix. (1830).

? *Canis vulpecula*, Hempr. & Ehrenb. Symb. Phys., Mamm. ii. (1830).

Vulpes niloticus, Smith (H.), Jardine's Nat. Libr. x. p. 248, pl. xxi.* (1840).

? *Vulpes algeriensis*, Loche, Expl. Algér., Zool. p. 21 (1867).

Fig. 6.

Skull of *Canis vulpes ægyptiacus*, $\frac{2}{3}$ nat. size. (B.M. 98.6.5.6.)

This is a local race of the European Fox, *C. vulpes*, and may be barely separable from the S. European form (var. *melanogaster*).

The Algerian Fox is included in the synonymy, but this form seems identical with the Foxes of Southern Europe.

Canis vulpes atlanticus.

Canis vulpes, var. *atlantica*, Wagner (A.), Wagner (M.), Reis. in Algier, iii. p. 31, pl. 3 (1841).

Vulpes atlantica, de Wint. P. Z. S. 1897, p. 957.

This form of the Atlas Mountains is only another subspecies of the European Fox, rather smaller than the form found in Egypt.

(2) *The Sand-Foxes.*

Canis pallidus. (Fig. 7.)

? *Canis rüppelli*, Schinz, Cuv. Thierr. iv., Suppl. p. 508 (1825).

Canis pallidus, Cretzschm. Rüpp. Atlas, p. 33, pl. xi. (1826); Mivart, Canidæ, p. 142, pl., partim.

? *Canis sabbar*, Hempr. & Ehrenb. Symb. Phys., Mamm. ii. (1832).

Cynalopex pallidus, Smith (H.), Jardine's Nat. Libr. ix. p. 228, pl. xvii. (1839).

Canis corsac, Lesson, Tabl. Règ. Anim. p. 40 (1842), partim.

Vulpes pallidus, Gerrard, Cat. Bones Brit. Mus. p. 87 (1862).

Fennecus pallidus, Gray, P. Z. S. 1868, p. 520.

The dorsal region tawny, finely grizzled, almost the colour one sees in pale pug-dogs; paler on the sides and face, redder on the forehead; a reddish streak on the back of the fore legs from the

elbow downwards; reddish on the back of the thighs, above the tarsal joint. Most of the hairs of the tail are tipped with black, markedly so towards the extremity, the hairs at the end of the brush almost entirely black; there is a very distinct black patch on the tail over the gland. The fur is not so long or woolly and the tail is not so thick and bushy as in most small Foxes, and never has a white tag like *C. famelicus*.

Fig. 7.

Skull of *Canis pallidus*, ♀ nat. size. (B.M. 93.6.7.3.)

The name given by Schinz to a small Fox brought from Dongola by Rüppell has generally been referred, with doubt, to *C. famelicus*; but I feel no hesitation in assigning it to the species under discussion. The description in no way agrees with *C. famelicus*, while the colour in every way fits this species: "Rücken und Schenkel von aussen gelbgrau; die Haare sind nehmlich brandgelb, mit Schwarz gemischt," &c. In fact, the tail, colour of the head, likeness to *C. zerda*, but with coarser fur, so exactly represent this animal, that I feel tempted to adopt this most appropriate term, seeing that it perpetuates the name of so good a naturalist; and whether we apply it to this form or to *C. famelicus*, we must deprive Cretzschmar of one original description. But as there is a doubt, and as Dr. Mivart has called *C. famelicus* by the unfortunate English name of Rüppell's Fennec, I shall leave it alone; my sole object in writing being to point out the most salient points of distinction between the species, and so to assist in arriving at a uniform naming, by which one may always know what form is intended when a certain name is mentioned.

The uniform tawny colouring, almost like a pale-coloured lioness, distinguishes this little Fox from all others, the black dash on the upperside of the tail and the black tip being the only conspicuous marks. The ears are about 65 millim. long.

The skull cannot be confused with that of any other Fox; the line of the forehead is carried forward considerably in front of the orbits, giving it the appearance of having a bump on the bridge of its nose; the teeth are very small and neat, the premolars with clear spaces between each; the flesh-teeth are actually smaller than those of the Fennec (*C. fennecus*), a much smaller animal.

Its range seems very restricted: all the specimens examined were obtained between Suakim and Dongola. Possibly the nearest ally to this little Fox is *C. bengalensis*, but this relationship is not close: it certainly has nothing in common with *C. corsac*.

Canis famelicus. (Fig. 8.)

Canis famelicus, Cretzschm. Rüpp. Atlas, p. 15, pl. v. (1826); Mivart, Canidæ, p. 144, pl.

? *Canis anubis*, Hempr. & Ehrenb. Symb. Phys., Mamm. ii. (1832).

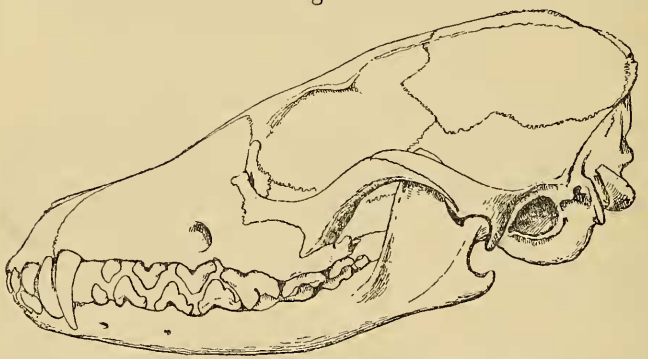
Megalotis famelicus, Smith (H.), Jardine's Nat. Libr. ix. p. 235, pl. xx. (1839).

Fennecus famelicus, Lesson, Tab. Règ. Anim. p. 39 (1842).

Vulpes dorsalis, Gray, Cat. Mamm. Brit. Mus. p. 62 (1843), partim.

Fennecus dorsalis, Gray, P. Z. S. 1868, p. 519, partim.

Fig. 8.



Skull of *Canis famelicus*, ♀ nat. size. (B.M. 98.6.5.7.)

Fur very long, soft, and dense; general colour soft fawn, more or less interspersed with coarser grizzled hairs, often giving it a steel-blue tint. Ears very long, rich fawn-colour: the face paler yellowish buff, with strong brown patches immediately above the whiskers, the dark colour, slightly modified, encircles the eyes. Along the dorsal line the fur is redder than on the sides, the underfur being grey tipped with reddish brown. There are reddish patches on the back of the hind legs above the heel. The tail is very thick and bushy along its whole length, with a very distinct white tag; there is a depression in the fur over the gland, and the hair is generally clogged at the base with a yellow substance, which gives off a distinct aromatic odour.

This is, perhaps, the prettiest of all the Sand-Foxes; the ears are very large, but not exaggerated like those of the Fennec. I am able to give the weight and dimensions of this little Fox, taken from fresh-killed animals by two collectors, to whom the Museum is much indebted for numerous carefully-collected specimens.

♀. Near Cairo, Mr. R. J. Cuninghame. Head and body 415 millim., tail 305, hind foot 97, ear 87; weight 2 lbs. 9 oz.

♀. Near Berbera, Dr. A. E. Atkinson. Head and body 445 millim., tail 345, hind foot 122, ear 100.

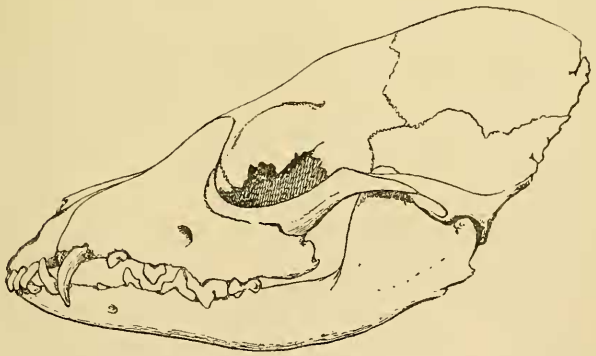
The skulls of other specimens from Egypt show that the specimen was rather undersized, but there is no difference worth mentioning between Egyptian and Somaliland specimens. A little Fox from Afghanistan, as mentioned and figured by Dr. Mivart, appears to be identical with this species.

The conspicuous brown marks on the face, the white tag to the tail, and the density of the fur are characters which could not possibly be excluded from any description; therefore I feel convinced that Schinz did not form his *C. rüppelli* on this species. The legs also are very short, and not longer in proportion than those of *C. zerda*.

Canis dorsalis. (Fig. 9.)

Canis (*Vulpes*) *dorsalis*, Gray, P. Z. S. 1837, p. 132.
Vulpes dorsalis, Gray, List Mamm. Brit. Mus. p. 62 (1843).
Fennecus dorsalis, Gray, P. Z. S. 1868, p. 519.
Vulpes edwardsi, Rochebr. Bull. Soc. Philom. Paris, 1882 (Oct.) p. 8.

Fig. 9.



Skull of *Canis dorsalis*, ♀ nat. size. (B.M. 40.12.20.3.)

The type of Gray's species (from Senegal), which is still in the British Museum, is so much faded that it is impossible to give an accurate description of the skin; I can say, however, that it belongs neither to *C. famelicus* nor *C. pallidus*. The skull shows it to be a very young animal in milk-dentition, probably larger than *C. famelicus*, but its black-tipped tail proves that it is not even a local race of that species. Its much greater size is sufficient to separate it from *C. pallidus*. This is without doubt the same species as that described by Rochebrune. Dr. Mivart does not give an opinion on this species, and even leaves the name out of his synonymy.

Canis chama. (Fig. 10.)

Canis chama, Smith (A.), S. Afr. Quart. Journ. 1833, p. 87; Sclater, P. Z. S. 1875, p. 81, pl. xvii.

Megalotis caama, Smith (H.), Jardine's Nat. Libr. ix. p. 236, pl. xix. (1839).

Vulpes caama, Gerrard, Cat. Bones Brit. Mus. p. 87 (1862).

Fennecus caama, Gray, P. Z. S. 1868, p. 520, fig. 7, skull.

Fig. 10.

Skull of *Canis chama*, $\frac{2}{3}$ nat. size. (B.M. 46.8.3.2; 815 *a*.)
(From P. Z. S. 1868, p. 520.)

General body-colour grizzled grey, the face reddish, most of the hairs white-tipped; ears long, rust-coloured; fore legs pale buff, with a brown streak running down the backs from the points of the elbows; hind legs also pale buff, there is a conspicuous brown patch on the tibial joint, just above the hocks; the tail is bushy, most of the hairs tipped with black, almost completely black at the end of the brush.

This Fox is somewhat nearly allied to the smaller *C. famelicus*, but is a longer-legged and larger animal. The skulls of these two species are approximately the same length, but that of *C. chama* is very much heavier and broader. The facial portion is particularly broad and the muzzle blunt; the zygomatic arches are nearly as broad in front as behind. The back of the palate is very much broader, the tooth-row actually shorter, and the teeth very small, measuring less than those of *C. famelicus*.

The skull much resembles that of *Otocyon*, but the squamosal portions of the zygomata are broader, and the supraorbital and temporal ridges are not so heavy.

This species is found in sandy districts south of the Zambesi, from the extreme south of the Colony to Namaqualand and Bechuanaland.

(3) The Fennec.

Canis zerda. (Fig. 11.)

L'Animal anonyme, Buffon, Hist. Nat. Suppl. iii. p. 148, pl. xix. (1776).

"*Vulpes minimus saarensis*," Skjöldebrand, K. Sv. Vet.-Ak. Handl. 1777, p. 265, pl. vi.

Canis zerda, Zimm. Geogr. Gesch. ii. p. 247 (1780).

Canis cerdo, Gmel. Syst. Nat. i. p. 75 (1788).

Viverra aurita, Meyer (F. A. A.), Syst.-summ. zool. Entdeck. Neu-Holl. u. Afr. p. 91 (1793).

Fennecus arabicus, Desmar. Nouv. Dict. H. N. xxiv. 1804, Tabl. Méth. p. 18.

Megalotis cerda, Illig. Prodr. Syst. Mamm. p. 131 (1811).

Megalotis cerdo, Oken, Lehrb. Naturg. ii. p. 1032 (1816).

Fennecus brucei, Desmar. Enc. Méth., Mamm. p. 235 (1820).

Megalotis zerda, Schinz, Cuv. Thierr. i. p. 222 (1821).

Fennecus cerdo, Childr. & Vigors, Denham & Clapp. Trav. Afr. App. xxi. p. 183, pl. (1826).

Canis megalotis, Smith (H.), Griff. Cuv. Anim. Kingd. ii. p. 373, pl. (1827).

Megalotis brucei, id. ibid. v. p. 152.

Canis fennecus, Less. Man. Mamm. p. 168 (1827).

Megalotis zerda, Smith (H.), Jardine's Nat. Libr. ix. p. 237, pl. xx. (1839).

Fennecus zerda, Less. Nouv. Tabl. Règn. Anim. p. 39 (1842).

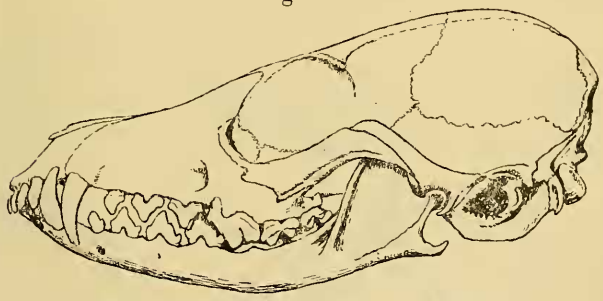
Vulpes zaarensis, Gray, List Mamm. Brit. Mus. p. 62 (1843).

Canis cerda, Gerv. Mamm. ii. p. 75 (1855).

Megalotis fennecus, Knight's Pict. Mus. Anim. Nat. p. 207 (c. 1860).

Fennecus zaarensis, Gray, P. Z. S. 1868, p. 519.

Fig. 11.



Skull of *Canis zerda*, ♀ nat. size. (B.M. 182*f*.)

Very pale fawn on the upper parts, on the shoulders or fore part of the back some of the longer hairs are black-tipped; from the saddle backwards the hairs are more uniformly coloured and more glistening, paler on the face and legs, and gradually becoming silvery white underneath; brownish patches between the eyes and whiskers; black tip to the tail; gland on tail very evident, the coarse texture of the black-tipped hairs covering this part being more evident in this animal than in any other, owing to the silkiness of the fur generally. Underfur on all the upper

parts with a dark ash-grey band about equidistant between the base and the tip of the hairs; below this dark band the hair is silky white, above buff; on the underparts this dark band is not present. The hair exceedingly soft and silk-like.

Ears much longer than the head. In dry skins the ear measures about the same length as skull.

The skull is rather shorter than that of *C. pallidus*, but the breadth across the zygomata is greater; the nasal portion is very narrow; the orbits very large; and the front part of the brain-case considerably constricted. The length of the entire tooth-row is about equal to that of *C. pallidus*, the teeth being individually larger than in that species, and so set very much closer together.

There is very much uncertainty as to the distribution of this species; most of the known specimens have been brought from the Sahara through Algeria. Dr. Anderson will no doubt throw more light on it when the result of his researches into the mammalian fauna of the oases on the Egyptian side is made known.

Genus 2. Otocyon.

Otocyon megalotis. (Fig. 12.)

Canis megalotis, Desmar. Enc. Méth., Mamm. Suppl. p. 538 (1821).

Canis lalandi, Desmoul. Dict. Class. Hist. Nat. iv. p. 18, pl. (1823).

Megalotis lalandi, Smith (H.), Griff. Anim. Kingd. ii. p. 372, pl. (1827).

Fig. 12.

Skull of *Otocyon megalotis*, ⅔ nat. size. (B.M. 98.3.9.8.)

Otocyon caffer, Licht. Arch. f. Naturg. i. 1838, p. 290.

Agriodus auritus, Smith (H.), Jardine's Nat. Libr. x. p. 260, pl. xxiii.* (1840).

Otocyon megalotis, Lesson, Tabl. Règn. Anim. p. 39 (1842).
Otocyon lalandii, Gray, List Mamm. Brit. Mus. p. 62 (1843).
Megalotis lalandii, Gray, Cat. Mamm. Brit. Mus. p. 211 (1869).

General colour dark iron-grey, paler on the forehead and in front of ears; tips and back of ears, muzzle, fore and hind legs, dorsal surface, and tip of tail black. The fur of the back is very long. Everywhere the underfur is long, dark grey for the basal half and pale buff for the remaining half of its length; on the back the terminal half is more rust-coloured; the longer coarse fur is ringed with yellowish white, with long black tips. The ears are very large and rounded, of about the length of the head. The gland on the tail is well-marked and active.

The skull is very flat, with heavy supraorbital and temporal ridges; the orbit is more nearly encircled with bone than in any of the members of the genus *Canis*.

The teeth of this animal are quite unlike those of any true Fox. There is normally one more molar in each jaw than in the genus *Canis*, and the flesh-teeth both above and below are scarcely longer (in horizontal or vertical direction) than the teeth on either side of them.

This animal is found in sandy districts from the Cape to Somaliland. It has unfortunately been given the name of Fennec in South Africa, which has given rise to much confusion, since the true Fennec is not found in any part of its range and is a totally distinct animal.

Genus 3. Lycaon.

Lycaon pictus. (Fig. 13.)

"Mebbia," Kolbe, Kaap de Goede Hoop, i. p. 181 (1727).
"Chien Sauvage," Le Vaillant, Voy. 1er, t. i. p. 199 (1790).
"Wilde Hond" (Dutch), id. ibid. t. ii. p. 152 (1790).
Canis aureus, Thunb. Mém. Ac. Pétersb. iii. 1811, p. 302, nec Linn.
Hyæna picta, Temm. Ann. Gén. Sci. Phys. iii. 1820, p. 54.
Canis pictus, Desmar. Enc. Méth., Mamm. Suppl. p. 538 (1821).
Hyæna venatica, Burchell, Travels, i. p. 456, ii. p. 229 (1822).
Canis (Lycaon) tricolor, Brookes, Griff. Anim. Kingd. v. p. 151 (1827).
Lycaon tricolor, Brookes, Prodr. Anim. p. 10 (1828).
Cynhyæna, F. Cuv. Dict. lix. p. 454 (1829).
Canis hyænoides, Is. Geoff.?
Lycaon typicus, Smith, S. Afr. Quart. Journ. 1833, p. 91.
Lycaon pictus, Smith, ibid.; Mivart, Canidæ, p. 196 (1890).
Kynos pictus, Rüpp. Verzeichn. Mus. Senck. p. 19 (1842).
Cynhyæna picta, Lesson, Tabl. Règn. Anim. p. 38 (1842).
Lycaon venaticus, Gray, List Mamm. Brit. Mus. p. 62 (1843).

The peculiar colouring and habit of hunting of this animal are

too well known to need description; it is sufficient to say that no two skins are alike in pattern.

This species ranges in suitable localities from the extreme south of the Continent up the eastern side to Abyssinia; in the more central part of the Continent specimens of it from Lake Mweru have been obtained by Mr. Richard Crawshay, and Schweinfurth has recorded it from Bongoland.

Fig. 13.

Skull of *Lycaon pictus*, ½ nat. size. (B.M. 1141 *a*.)

I have particularly mentioned Le Vaillant's name in the synonymy, to draw attention to the work of that naturalist, whose observations on the habits and measurements of the mammals of South Africa are among the best and most accurate that have been published up to now. It has been the fashion to treat this traveller with disrespect; but his observations on mammals are excellent, and it is to be regretted that he did not carry out his promise of writing a special account of them.

May 2, 1899.

Prof. G. B. Howes, LL.D., F.R.S., F.Z.S., in the Chair.

Mr. Sclater exhibited specimens of some Mammals, mostly obtained by the collectors in the employment of the Administration of British Central Africa who accompanied the Commission for the Delimitation of the Anglo-German Boundary across the Nyasa-Tanganyika plateau in 1898. They had been kindly examined by Mr. W. E. de Winton, and referred to the following species:—

1. *Rhynchocyon reichardi* Reichenow.

Two specimens.

2. *Genetta tigrina* (Schreb.).

3. *Herpestes* sp. inc.
A flat native skin without skull obtained by Mr. J. B. Yule at Karonga, 13.7.98.

4. *Mellivora ratel* (Sparrm.).

5. *Sciurus cepapi* A. Smith.
Two specimens. Cf. *Tunisciurus cepapi*, Thomas, P. Z. S. 1897, p. 933.

6. *Procavia arborea* (A. Smith).
New to this locality, and only previously known from South Africa.

7. *Cephalophus lugens* Thomas, P. Z. S. 1898, p. 393.
The type of this species is of a uniform soot-colour. In the present specimen (which is marked male) the legs and a stripe on each side of the face are slightly reddish. The type was a female; so the difference in colour may be sexual.

Dr. C. I. Forsyth Major exhibited specimens of a Lemur from Madagascar, "*Prosimia rufipes*" of Gray, and made the following remarks:—

It is well known that the male of *Lemur macaco* L. is black, and that the female, which was at one time regarded as a distinct species (*L. leucomystax* Bartl.), is red. In 1880 the Secretary of this Society pointed out that a black Lemur, received at the Society's Gardens on Nov. 25th, 1878, and which was at first determined as *L. macaco*, proved to be distinct, and accordingly the name *L. nigerrimus* was proposed for the former, with the reservation that "it may possibly turn out to be a black variety of some known species." Figures are given of the heads of both species. *L. nigerrimus* is said to be "a larger and more intensely black animal, with a raised crest of short upstanding hair on its head. Moreover, the ear-conch is naked, and not furnished with tufts of hair as in *Lemur macaco*" [1].

At the meeting of this Society on February 28th, 1893, an extract from a letter from Prof. A. Milne-Edwards to the Secretary was read, in which it is stated that the female of *L. nigerrimus* is rufous-brown ("*brune*"), and that it had been described by Gray in 1871 under the name of *Prosimia rufipes*. Prof. Milne-Edwards further states that the colour of the eyes of *L. nigerrimus* and its female is characteristic, the iris being greenish blue ("*d'un bleu tirant sur le vert*"): also that the species comes from Cape Ambra, in the far north of Madagascar [2].

Gray's description of "*Prosimia rufipes*" was based on a male *and* a female specimen, which are exhibited in the Gallery of the Natural History Museum. Both are rufous-brown above, the

[1] P. Z. S. 1880, p. 451, figs. 1, 2.
[2] P. Z. S. 1893, pp. 177, 178.

only difference in the coloration between the sexes being that, whilst the underparts of the body are bright bay in the male, they are reddish-grey in the female [1]. The specimens were obtained by Crossley, and came, according to the Register, from the Betsimisaraka Country, which is rather a vague definition.

I have myself collected specimens of what I consider to be the same as Gray's species in four different forest-districts, from 900 to about 1300 metres above the sea-level, viz. at Ampitambè, N.E. Betsileo (at the confines of the Betsimisaraka country); at Ambohimitombo and Ivohimanitra, farther to the south, in the Tanala country (the Tanalas, "foresters," are part of the Betsimisaraka tribe); and, lastly, at Vinanitelo, Southern Betsileo, on the confines of the Tonalas of Ikongo. The coloration varies slightly from one locality to the other; especially the specimens from the lowest district, Ivohimanitra, are of a lighter coloration, and in the females the throat is white; in young specimens the whole of the underparts being of this coloration. From my material I am disposed to agree with Schlegel [2], who considered Gray's "*Prosimia rufipes*" to be the same as Is. Geoffroy's *Lemur rubriventer* and *L. flaviventer* [3], the latter based on the two female specimens held by Schlegel, rightly as I think, to be females of the former.

My collections contain about a dozen individuals, ♂, ♀, and young; but I have never met with a black male. At first sight it would appear quite possible that in the most northern parts of Madagascar the males of one species of *Lemur* might have a different coloration from those in more southern districts.

Unfortunately, neither the type of *L. nigerrimus*, which, as said before, lived at the Society's Gardens, nor any other black Lemur, apart from *L. macaco*, is in the Natural History Museum. I should not attach great weight to the colour of the iris, stated to be greenish-blue in both male and female *L. nigerrimus*, if this coloration were not such a very exceptional occurrence in Lemurs. All my supposed specimens of *L. rufipes* had a dark yellow iris, nor have I ever met with bluish eyes in any species of Lemur.

Of more importance still is the difference in the skulls, those of *L. nigerrimus* figured in Grandidier's work [4] being different from Gray's and my specimens of supposed *L. rufipes*. So that, in conclusion, until better evidence is forthcoming, I am not inclined to admit the specific identity of the two forms.

Mr. G. A. Boulenger exhibited a specimen of the fish *Polypterus congicus*, measuring 22 centimetres long, from the River Congo (Bangala Country), remarkable for the retention of the right opercular gill, the axis of which measured 34 millimetres and the

[1] Dr. J. E. Gray, "On a new Species of Lemur from Madagascar" &c., Ann. Nat. Hist. [4] vol. viii. p. 339 (1871); id. P. Z. S. 1872, pp. 852, 853, pl. lxix. (coloured figures inaccurate).

[2] H. Schlegel, Monographie des Singes, p. 311 (1876).

[3] Is. Geoffroy Saint-Hilaire, Catal. méth. Coll. Mammif. &c. pp. 71, 72 (1851).

[4] Hist. Madag., Mamm. Atlas, ii. 1890, pl.

fringes 15. The left opercular gill was absent, and nothing indicated its absence to be the result of an injury.

Mr. R. Lydekker, F.Z.S., exhibited a pale-coloured specimen of the Reed-buck (*Cervicapra arundinum*), and read the following notes on it, extracted from a letter addressed to him by Mr. Ewart S. Grogan:—

"I have much pleasure in forwarding to you the horns, head-skin, and hide of what appears to be a white Reed-buck. I shot the latter on the Longwe, at the north end of Lake Nyasa. Capt. Verhellen, of Mohun's expedition, first called my attention to it, by asking me (he knows nothing of the game in this part) what those little grey antelope were; he was *very* positive as to having seen four: one, a female, he wounded and lost; but though I hunted the small plain where he states he saw them, I never found any but the ram I killed, and it is the Reed-buck's habit to generally run in the same party; *i. e.* four running together would, I think, never go far apart, at any rate at the same season of the year. The natives whom I questioned closely say they have seen one only; but this counts for little. The buck showed no signs of albinism—lips, nostrils, *eyes*, and hoofs being of the normal colour. On comparing the skull with two others I thought I detected considerable variations, especially in the base of the skull. Will you kindly describe the animal for me, and bring it before the notice of those who are interested in this branch of zoology? Personally I am inclined, owing to the persistent rumours of similar animals in this country, the striking and *very* definite assertion of Capt. Verhellen, and the complete absence of the usual signs of albinism, to think that it is a distinct form. I have taken what measures I could to preserve the skin and trust that it will arrive in good order."

The following papers were read:—

1. On the Primitive Type of the Plexodont Molars of Mammals. By Florentio Ameghino, C.M.Z.S.

[Received February 13, 1899.]

The majority of placental Mammals, and especially the Ungulates, are distinguished by the plexodont character of their molars—that is, by molars having a complicated crown, and each tooth being provided with more than one root.

The origin of this dentition has been explained by two completely different theories—the theory of a gradual complication, and that of fusion. According to the former, the plexodont molars are the result of a progressive complication of the simple and conical primitive tooth of Reptilia. According to the latter, these same teeth are the result of fusion of the dental germs or embryos of